

*Dražen Smiljanić**

JEL Classifications: H56, O11, O25

Review article

CROATIA'S DEFENCE INDUSTRIAL BASE – AN ECONOMIC POLICY PERSPECTIVE

This paper evaluates the developments in Croatia's defence industrial base (DIB) from an economic policy perspective. By reviewing existing strategic and policy documents, this evaluation analyses the potentials and obstacles of Croatia's DIB to become beneficial to the overall Croatian economy and a relevant supplier for the national defence. The result shows that the DIB in the Republic of Croatia is neither being developed nor sustained under a formal defence industrial policy/strategy framework. However, a systematic approach based on the Smart Specialisation Strategy provides a broad framework for initiatives and practices aiming to ensure viability and growth of the firms comprising Croatia's DIB.

Key words: economic policy, Croatia's defence industry, defence industrial base, smart specialisation strategy

1. Introduction

One of the most significant public policy challenges facing Western countries is to reconcile the requirements of national security with the desire to achieve a prosperous and growing economy (Weidenbaum, 2015). Within a lim-

*D. Smiljanić, Director of the Centre for Defence and Strategic Studies at the Croatian Defence Academy, Ministry of Defence, Zagreb (E-mail: smiljanic.drazen@gmail.com).

The paper was received on November 10th, 2017. It was accepted for publication on March 1st, 2018.

ited defence budget, further choices are needed. Resources must be allocated among different types of cost: personnel, operational, acquisition and modernisation, research and development, and moreover between branches (usually army, navy and air force) of the armed forces. Evolving security threats and the emergence of disruptive technologies require the armed forces and defence industries to adapt to challenges. Provision for the full spectrum of required defence capabilities from domestic suppliers is rarely possible, let alone feasible, for the majority of countries. An important strategic choice that a country must address is deciding what product to support to ensure effectiveness and efficiency of its armed forces' capability development. This support is in fact undergirding the country's defence industry and its components, i.e., the firms supplying the defence sector.

These firms often need support for a couple of reasons. The first is survivability on the market. The national defence market, such as Croatian, is usually too small compared to the international market which is highly globalised and competitive. The reduction in domestic demand implies an increase in firms' unit cost – mainly due to the decrease of the portfolio – and the need for internationalisation in order to trade the products not sold in the domestic market.

The second is the changing role of the Ministry of Defence (MoD). As an entrepreneur, the MoD does not have jurisdiction due to the privatisation of public companies in the 1990s. With regards to research and development (R&D), MoD has substantially reduced both the budget devoted to technology development as well as the reimbursable funds. As a customer, a declining defence budget limits MoD's bargaining power against firms.

On the other hand, the MoD faces its own challenges regarding the sustenance of provision for acquisition from domestic sources – the globalisation and the transfer of technology to a civil sector (*spin-off*). Globalisation involves greater international transactions for goods, services, technology and factors of production which create new security challenges for nation-states and the international community. Most of the companies that supply the defence sector have become international companies with international supply networks (Hartley, 2011).

In most Western countries, particularly in Europe, the basic building blocks of the defence industrial base have not kept pace with the technology development of the civilian society. Consequently, the MoD risks no longer having exclusive access to either the most cutting-edge technologies or the ability to control its development (Simm, 2016:p.15).

In order to reconcile the above-mentioned issues, we argue in favour of those efforts by a government that are oriented towards the development of economic

policies¹ in the Republic of Croatia that create conditions in which military expenditures are not solely a burden but also a source of economic growth. One example of the desired approach may be the United Kingdom where “the Government has a vital role in supporting UK based industry to succeed in a competitive global marketplace” (SoSfD UK, 2012:p.8). Moreover, although the governments in most western countries do not have the same role in managing and controlling the national defence industry as was the case during the Cold War period, a government may still play a significant role in supporting the defence industry sector by outlining its expectations related to defence capabilities. It is again worth providing a UK example that describes the role of the government, stating that “The Government, therefore, needs to be clear about what it expects from those who help supply current and future security capabilities” (SoSfD UK, 2010:p.23). The primary focus of analysis described in this paper is on the existence of those governmental economic policies that support vitality and growth of competitiveness in the Croatian defence industry.

The article is organised in four sections: section 1 discusses the evolving concepts of the defence industry; section 2 provides an analysis of the context in which the current developments in Croatia's defence industry are taking place; section 3 provides an overview of potentials and obstacles for the Croatian defence industry and ends with section 4 that offers conclusions and recommendations.

2. Evolving concepts of the defence industry

The national defence industry is the connecting point of the security – economy nexus. While there are, apparently, other ways to reduce the cost of national defence (e.g., membership in the alliance(s) via principles of burden sharing), the challenge of reducing military expenditure remains tangible even for the most economically developed countries. It is, therefore, not surprising that many countries are trying to find a way to make their defence sectors more versatile, productive, and competitive as well as have a higher return on investment.

Before analysing policies that governments are developing to support their defence industry, it is important to clarify its meaning. The traditional approach of industrial economics defines industry boundaries by the degree of substitution

¹ Economic policy comprises „the strategies and measures adopted by the government to manage the economy as a means of achieving the economic objectives“ (Source: [financial-dictionary.thefreedictionary.com/economic+ policy](http://financial-dictionary.thefreedictionary.com/economic+policy)). Economic policies are also „the results of economic planning: the decisions governments make to influence the production, consumption, and sharing of wealth“ (RAND, n.d.).

for demand between products. However, the products needed and used for national defence usually perform different functions in the activities of armed forces, and in most cases cannot be an operational replacement for one another. Even companies commonly perceived to belong to the same sector of the defence industry (e.g., aerospace, shipyard, etc.) often do not produce interchangeable products. The aerospace industry, for example, includes producers of combat aircraft, military transport aircraft, surveillance satellites, helicopters and guided missiles, all of which have a different military function (Lifshitz, 2003).

The defence industrial base (DIB) or the defence technology and industrial base (DTIB) is, arguably, a broader concept than the arms industry². Actually, “it encompasses the entire national resources required for providing and maintaining the national requirements of military equipment” (Sköns and Dunne, 2009:p.113). As there are many definitions of DIB, it is useful to analyse a few of them to gain a better understanding of the term. Regarding its constituents, the defence technology and industrial base is defined as

“the combination of people, institutions, technological know-how, and facilities used to design, develop, manufacture, and maintain the weapons and supporting defence equipment needed to meet national security objectives. It consists of three broad elements - R&D, production and maintenance” (Office of Technology Assessment, 1992:p.4).

More importantly, DIB could be understood as “a sector or groups of industries that are dependent to some degree on defense spending and upon which the state is dependent for some degree of self-sufficiency in the production of the means of defense and war” (Dunne, 1995:p.401). That definition is the case when the DIB is defined from the perspective of public policy, namely the totality of organisations, property and industrial activities towards which governments maintain an explicit policy, intervening to assure their existence for national security reasons. In the past, these were linked mainly to industries related to the processing of strategic materials (e.g., petroleum, steel, special metals) while today the emphasis is on industries committed to high technology (Kapstein, 1992:p.92).

The following definition aligns the defence industry with defence capabilities i.e., the military power and the customer:

“The defence industry is defined in the broadest sense as the industrial assets, which provide key elements of military power, in other words, companies that provide defence and defence related equipment to the defence ministry” (Boulanin, 2012:p.37).

² According to Elisabeth Sköns and Jean Paul Dunne (2009), arms production is “the production of military goods and services, but not of arms for civilian use such as hunting”.

In general, the defence industry is not an “industry” in the usual sense (Beard, 1993:p.30). Very often, for statistical and other purposes, defence companies are assigned to “ordinary” industrial categories (metal products, electronics, etc.), and do not count as a separate sector. Similarly, it is impossible to draw a clear line between defence and other industries by referring to the technological features of defence products. The accepted taxonomy in this respect describes a hierarchy of complexity. In the European Union (EU), the security and defence industry is seen as an integral part of the relevant security policy. “A competitive EU security industry is the *conditio sine qua non* of any viable European security policy and for economic growth in general” (EC, 2012:p.4). Despite that, the clear methodical classification of the security industry on the EU level is missing. The reasons are the following: “the security industry is not covered as such by the main statistical nomenclatures (NACE, Prodcom, etc.). The production of security-related items is hidden under a wide range of headings. Statistics for these headings do not distinguish between security and non-security related activities” (EC, 2012:p.8). The situation is similar in Croatia; consequently, the Ministry of Economy adopted a new definition:

“Modern defence now refers to the totality of the armed, civil and economic defences in close cooperation of all security structures and stakeholders. In this sense, any material-technical means, equipment, device, accessories, food and beverage that can be used for the purpose of defence and security and that are manufactured according to specific technical standards in the field of defence and security (such as MIL and NATO quality standards) can be considered as the defence one, while the manufacturer of the above falls within the defence and security industry” (CDICC, n.d.).

3. Croatia's defence industry – the context and current development

3.1. Current developments in Croatia's defence industry

From the supply side, the Croatian defence industry comprises a set of heterogeneous companies, ranging from textiles to weapons, including production and services, mostly local micro- to medium-firms with no multinationals. Some of them are heavily dependent on the MoD, particularly those that produce specifically military vehicles (e.g., tanks or armoured vehicles). From the demand side, for many years, particularly in the 1990s, the MoD had acted as the main customer although, recently, the Ministry of Interior turned out to be an important customer, particularly for dual-use products.

After the warfare activities in Croatia had finished in 1995, many producers who had created armaments and equipment for the Croatian Armed Forces continued their production to be sold on the arms market. They kept abreast of the newest developments in defence production and technology and perfected their products on a regular basis while developing new ones, following global standards and trends. Today, they are becoming respected arms and military equipment producers that have proven their capabilities in Croatia and abroad.

Croatia, even after it became a fully-fledged member of NATO, has continued to align its military with NATO military institutions. This transition process includes a reorientation of the armed forces towards NATO-compatible doctrines and interoperability, reduction of active duty personnel and modernisation of the military. To accomplish its goals, the Croatian MoD developed a Long-Term Development Plan (LTDP) 2015-2024 (Croatian Parliament, 2014b). According to LTDP, equipping and modernisation will be accomplished by first upgrading existing equipment (as long as it can meet NATO standards) and second through domestic production of arms and equipment. What the MoD cannot acquire from domestic sources, it will seek to acquire on the global market.

Over time, the Croatian defence industry has enjoyed the support from the Croatian MoD and the Armed Forces, evident in the constant emphasis on the fact that the Croatian soldiers and officers were equipped and armed, whenever possible, with the products manufactured in Croatia. The Croatian Armed Forces members were confident in domestic products, used in a variety of operational and climate conditions, during the war operations and later when participating in UN- and NATO-led missions and operations. It was the international operations (primarily NATO-led operations like ISAF in Afghanistan) that revealed the ability of the Croatian defence industry to adapt to different markets.

The Croatian defence industry's exports are increasing each year, and the defence industry represents today a very positive example of entrepreneurship, innovativeness and agility. After being abundantly supported by the Croatian government in the 1990s, during the time of the most pressing needs for national security, when the national defence consumed the whole production, i.e., Croatian Armed Forces, the situation changed in the 2000s. Namely, the demand for arms production decreased significantly, and this sector of the industry found itself increasingly equal to other industrial sectors, regarding functioning in the market. Many of the production lines established quickly in the early 1990s to satisfy urgent needs were converted back to civilian programmes or closed in the late 1990s or the 2000s. On the other hand, some new market subjects arose, which after successfully proving their quality for the Croatian MoD and Ministry of Interior became respectable exporters to foreign markets.

The export of lethal military goods has been measured since 2009³ and confirms the general upward trend. The Croatian defence industry reported significant growth in 2015. According to the annual report published by the Ministry of Economy (MoEEC RC, 2016), exports of weapons and military goods increased 37 percent between 2014 and 2015. The value of exported weapons and related military goods exports exceeded €130 million. Significant potential also lies in the service sector. One example is the overhaul of the command ship of the US Sixth Fleet, USS Mount Whitney, performed at the shipyard Viktor Lenac in Rijeka that brought more than 30 million USD of income (Pavlić, 2016). Exports of other services, such as transportation and intermediary services, also contributed to the final result with €1 million.

Croatia's accession to NATO in 2009 and the European Union in 2013 respectively gave a crucial new incentive to the Croatian defence industry, bringing more free market values sustained by the two organisations and an essential reference for the industry operating in a country that is now a full member. Out of 3,407 products at the HS-6 digit level⁴ that Croatia exported in 2012, only four were winners in growing sectors. These products are medicaments and antibiotics, cane of beet sugar in solid form, articles of leather or composition leather and revolvers and pistols. These sectors had a positive growth in world imports in the period 2008-2012 associated with an increase of Croatia's share of world exports over the same period (Government of the RC, 2016).

The number of companies in the Ministry of Economy's (MoE) military goods export/import registries shows the constant growth during the period 2009-2015 (Table 1).

³ The Croatian Ministry of Economy, Labour and Entrepreneurship published its first national report on arms exports (Annual reports on export and import of military goods and non-military lethal goods) in October 2010, providing information on arms imports and arms exports during 2009. The reports give the financial value of export and import licences and a description of the goods broken down by the destination or origin of the goods and control list category.

⁴ HS 6-digit - The World Customs Organization's Harmonized System (HS) uses code numbers to define products. A code with a low number of digits defines broad categories of products; additional digits indicate sub-divisions into more detailed definitions.

Table 1.

NUMBER OF COMPANIES IN MINISTRY OF ECONOMY'S MILITARY
GOODS EXPORT/IMPORT REGISTRIES

Number of companies in MoE registries	2009	2010	2011	2012	2013	2014	2015	2016
Registry of exporters and importers of military goods	64	78	100	113	130	138	164	195
Registry of military services providers	10	11	13	15	17	20	27	32
Total	74	89	113	128	147	158	191	227

Source: own, collected from Ministry of Economy's annual reports on export and import of military goods and non-military lethal goods from 2009 to 2016

Croatian experience suggests that a level of economic and technological development enables the realisation of a reduced concept of smart specialisation that focuses on the development of existing business clusters, industries and ventures of lower technological complexity. On the other hand, technological specialisation through supporting frontier research and key enabling technologies (KETs) is challenging to attain (Bečić and Švarc, 2015).

2.2. Croatia's economic policy framework related to the defence industry

To assess the level of Croatia's defence policy orientation, we use the categorisation from Ron Kane's study from 2009 "National governments and their defence industrial bases: A comparative assessment of selected countries". According to Kane's study, there are three categories of country groupings by defence policy orientation: Category I: Nations with Formal Defence Industrial Policies/Strategies, Category II: Nations with Less Formal Defence Industrial Policies and Category III: Nations with Focused Offset/Industrial Participation Policies (Kane, 2009:p.G-15). The Republic of Croatia belongs to the group of countries with Focused Offset/Industrial Participation Policies (i.e., category III). Before providing any evidence for that, it is useful to determine what the Defence Industrial Policy (DIP) is. Howard Pack and Kamal Saggi (2006:p.2) define industrial policy, in general, as "basically any type of selective intervention or government policy that attempts to alter the sectoral structure of production toward sectors that are

expected to offer better prospects for economic growth than would occur in the absence of such intervention, i.e. in the market equilibrium.”

Kane (2009:p.G-17) provides a more specific definition of the DIP, in analysing the UK's policy orientation: “The DIP Policy is intended to serve as a framework to guide decision-makers in addressing how best to address tensions between meeting its responsibility for providing the Armed Forces with high-quality equipment and services and achieving best value for taxpayers by securing economic and technological benefits to the country.”

Michael O'Hanlon (2011) argues that a good DIP must be inextricably linked to the assessment of the nation's security requirements. It may be said that some transparency related to the long-term defence planning in Croatia is provided by the Strategic Defence Review (Croatian Government, 2013) and the Long-Term Development Plan (LTDP; Croatian Parliament, 2014b).

The legal basis for policy or government regulations is as follows:

- The Code on Production, Overhaul and Trade of Armament (Croatian Parliament, 2002), in paragraph 11, provides an opportunity for manufacturers, which possess capacities of the highest importance for national defence, to require financial compensation from MoD when in “silent mode”. Equally, according to the same paragraph, manufacturers may request financial compensation if they are registered for arms production, but the export licence was not granted to them or has been revoked.
- Croatian Industrial Strategy 2014-2020 (Croatian Parliament, 2014a:p.115) does not recognise existing military goods production and defence based services as the national industry sub-activity with significant potential for development, growth and employment. Namely, according to the model of validation and grouping of the critical sub-activities used in the strategy, industrial activities were assessed and evaluated based on three criteria: (1) profitability, (2) export orientation and (3) size of the sub-activity. Authors of the strategy assessed the arms industry as a sub-activity with “no influence”⁵.
- MoD and the Ministry of Economy and (MoD and MoEEC RC, 2014) agreed to introduce offsets, understood as a requirement for local sourcing of a portion of the contract, for defence procurements over 2 million euros.
- Strategy for innovation encouragement of the Republic of Croatia 2014-2020 (MoEEC RC, 2014): The primary objective of this strategy is to

⁵ All analysed sub-activities were divided into five groups, relative to their potential: “initiators”, “guardians”, “questions”, “problematic”, and “having no influence” (Croatian Parliament, 2014a: p. 126).

increase the level of competitiveness of the Croatian economy and increase social well-being. The document lists around 40 guidelines structured around four thematic pillars: (1) Development of the innovation system and setting up a legal and fiscal framework to encourage innovation; (2) Strengthening the innovation potential of the economy; (3) Encouraging cooperation and knowledge flows between businesses and academia; (4) Strengthening human resources in innovation and creation of an attractive environment for world-class researchers.

- The Smart Specialisation Strategy – S3 (Government of the RC, 2016): Smart specialisation is a vital policy document and concept for Croatian innovation policy. It promotes the efficient, effective and synergetic use of public R&D investments and supports Croatia through diversification and upgrade of existing industries and strengthening their innovation capacity. The development of the S3 in Croatia was a complicated process since the document promotes the Triple Helix⁶ networking linking private (industry), scientific-research (academia) and public institutions (MoD and other ministries). These three stakeholders are expected to develop a shared vision for the future, rely on their strengths, comprehend scientific and technological developments, create networks and communities to maximise the use of available knowledge and be able to take and manage risks. The triple helix offers a high potential for developing synergy between institutions, in which case they not only cooperate but also collaborate.

3. Potentials and obstacles for the Croatian defence industry

The major challenges for the Croatian defence industry are arguably the viability and sustainability of companies that form this sector. The opportunities stem from its high innovative potential and the state-of-the-art products along with international visibility.

⁶ „The ,triple helix‘ is a spiral model of innovation that captures multiple reciprocal relationships at different points in the process of knowledge capitalization“ (Etzkowitz, 2002).

3.1. Obstacles - weaknesses and challenges

Although it does not depend entirely on orders from the MoD, the government is one of the most important customers of the Croatian defence industry. Consequently, the overall national economic context, which impacts the amount and stability of the defence budget, reflects on the defence industrial base as well.

One of the main challenges of the Croatian defence industry is its long-term objective to keep itself prosperous and at the same time to contribute to the national economy and security. The Croatian defence industry, which was heavily subsidised during the war, is struggling to stay feasible and many companies have diversified their portfolio to include the production of commercial products. The fact is that there is a lack of a formal DIP, aligned with the national security strategy that would give more incentives and ensure the certain stability of DIB.

While most of the arms and equipment manufacturers do business independently or through private export brokers, a significant part of customers prefers working via government agencies, since they are seen as the best guarantor. Namely, customers are interested in doing the business safely, and very often, mainly when large projects are involved, they will look for the best guarantee, which the government undoubtedly is (Pintarić, 2015).

Large manufacturers, mostly renowned multinational companies who trade thousands of millions annually may be a sufficient self-guarantor, but without the well-rooted position or government guarantee, it is almost impossible for smaller manufacturers to get contracts for production or sale of sophisticated and costly equipment. Another highly influential criterion in arms trade is the international status of the customer and end user. Namely, the responsibility in the arms production business does not end with the delivery, but involves an entire chain of subjects and entails extensive coordination and consultation with strategic partners.

The demand and requirements of the national MoD are significant, if not crucial. In reality, defence expenditure in Croatia, as a share of GDP, is after 2005 constantly below the NATO Guideline of 2% (Figure A1). The situation with the capital investments in procurement and construction is similar to above. Namely, the share of Defence Expenditure is continuously below the NATO Guideline of 20% (Figure A2). Consequently, the relatively modest investment potential of the Croatian MoD does not bode well for the needs for production of the Croatian defence industry. Moreover, Croatian MoD uses other opportunities to acquire military equipment. One example is via the US Foreign Military Financing⁷ pro-

⁷ FMF enables eligible partner nations to purchase US defence articles, services, and training through either Foreign Military Sale (FMS) or, for a limited number of countries, through Direct Commercial Contracts (DCC) channels. Official web site of the Programme is at: <http://www.dsca.mil/programs/foreign-military-financing-fmf>.

gramme in the form of donation. Some of the recent cases are: 162 pieces of Mine Resistant Ambush Protected Vehicles (MRAP), All-Terrain Vehicle M-ATVs, 30 pieces of MaxxPro (MRAPs) and 20 pieces of Humvees 30, as part of the Defense Security Cooperation Agency's (DSCA) Excess Defense Article programme, in 2014, and the donation of 16 helicopters Bell OH-58D Kiowa Warrior, that started in August 2016 (DSCA, 2014; Tabak, 2017).

One of the main national security policy constituents that the Croatian defence industry needs, in the long term, is sound long-term development planning at the MoD. To be able to focus and invest in future requirements the industry needs to understand its potential customers' plans and intentions. The Croatian defence industry would benefit from more concrete information and directions about future capability requirements of the Croatian Armed Forces and potentially from a strategic dialogue between industries and the national defence sector, similar to the NATO-industry forum⁸.

The support from the government is necessary, not only in defence related matters but also to ensure the provision of business friendlier legislative and administrative solutions and a more supportive environment regulated with adequate policies. Additionally, as the chairman of the Croatian Defense Industry Competitiveness Cluster, Mr. Zdravko Pavelić, stressed: "the vision for the Cluster is to foster the inventiveness of domestic scientific and production resources for defence and security activation and increase the share of costs for research and development of new defence and security products and services" (Dukić, 2017). R&D therefore may become a connecting link between the Croatian defence and security-related ministries, scientific community and academia along with the defence industry.

3.2. Potentials - strengths and opportunities

The strengths of the Croatian defence industry lie in its high innovative potential and the state-of-the-art products along with international visibility. The opportunities for its growth and development may be found in several areas:

- Agency for Investments and Competitiveness (AIC, 2013) identifies the four priority investment areas: (1) Improving the business environment

⁸ "The NATO-Industry Forum addresses a recognised need for an elevated strategic dialogue between NATO and industry to ensure that the Alliance benefits from the best solutions to military requirements, within expected budget and time constraints, now and in the foreseeable future". Source: NATO Industry Forum, available at: <http://www.act.nato.int/industryforum>

through the provision of institutional and infrastructure support for the development of the competitiveness of the defence industry; (2) Enhancing the competitiveness of the defence sector through research, technological development and innovation; (3) Development and presentation of an explicit financial model for the defence industry; (4) Positioning and internationalisation of the defence industry sector, strengthen the impact of the action with key stakeholders defence and security systems and identify potentials and possibilities of contributions of the defence industry sector to the development of society as a whole.

- Croatia's Smart Specialisation Strategy (Government of the RC, 2016) has recognised the Croatian defence industry as representing the critical element of the Thematic Priority Area⁹ (TPA) dedicated to security. This strategy argues that the producers under this industry sector represent a solid industrial base oriented towards high-tech products providing high added values, export-oriented and supported by skilled and experienced human resources in technical sciences and fields of expertise related to technologies in this TPA segment. Many companies that fall under the category of defence suppliers are coming from various industry sectors: metal-processing/armoured vehicles, shipbuilding (i.e., naval vessels, including the capacity of building submarines), robotic platform systems, unmanned demining vehicles, unmanned aerial vehicles, CBRN solutions and systems, textile and clothing industry, etc. However, at the same time, very few of them are oriented strictly towards the production of only military goods and services. Namely, most of them are oriented towards the production of dual-use products, services and technologies, which allow them to sell their products to commercial and defence customers. The primary interest identified, for companies operating within this category, is the export orientation of highly sophisticated products and services.
- Croatian National Security Strategy (NSS) from 2017 (Croatian Parliament, 2017) puts a particular emphasis on the need to establish mechanisms for effective, secure, unimpeded and reliable exchange of information between economic and academic sectors, and encourages the exploitation of all national potentials to develop the necessary defence capabilities. It is expected that this would allow access to the latest achievements in a wide range of research areas, modern technologies, and methods and techniques of

⁹ Five Thematic Priority Areas (TPAs) with relevant technological and production fields have been selected as the main focus for the Smart Specialisation Strategy (S3) in Croatia: (1) health and quality of life, (2) energy and sustainable environment, (3) transport and mobility, (4) security and (5) agro-food and bio-economy. Under these five TPAs, there are a total of 19 sub-areas.

scientific research that will help to raise the scientific and technological level of the defence industry and society as a whole. An integral part of these efforts, among others, is to overcome the dependence on military equipment of eastern origin, which will be achieved through increased national engagement and international co-operation. The NSS, arguably, aims to establish a supportive context for the involvement of all relevant national potentials, primarily intellectual (information, knowledge, experience, efforts etc.) and scientific, to facilitate defence capability development more synergistically.

- R&D investment will increase, encourage innovation, facilitate the deployment of new and digital technologies in business, and accelerate the development of business networks and connectivity. Strengthening of the innovation infrastructure will ensure sustainable development, employment growth and social inclusion.
- It worth mentioning that Croatia is amongst the first EU members that recognised and practically use the Defence Dual-use Technology Projects, and the Ministry of Economy will actively support those stakeholders of the defence industry actively engaged in its projects (in their further development).
- European structural and investment (ESI) funds represent an excellent opportunity to engage in dual-use (civil-military) products. The total amount of the funds available for Croatia's producers of dual-use products and services, under the authority of the Croatian Ministry of Economy, for the period 2014-2020, is about 305 million € (Poslovni dnevnik, 2016). Croatian medium and large companies invest more than 90% of private investments in R&D, while large companies invest about 60% (MoRDEF RC, 2012:p.2).
- To prepare companies to apply for ESI funds – the Ministry of Economy has established the national Competitiveness Cluster of the defence industry. This cluster represents one of the twelve Competitiveness Clusters formed in 2013. The Cluster includes approximately 50 active members in 2017.

4. Conclusion - recommendations

Evaluated through Kane's taxonomy (2009:p.G-15), Croatia has slowly moved from Category III (i.e., nations with focused offset/industrial participation policies) towards Category II (i.e., nations with less formal DIP). The Smart Specialisation Strategy (Government of the RC, 2016) targets, among other areas,

defence industry and may be considered as an excellent example of the less formal industrial policy.

Defence industrial base in the Republic of Croatia is therefore neither being developed nor sustained under a formal DIP/strategy framework. On the other hand, the domestic suppliers for the defence are strongly supported by Croatian MoD's by giving them priorities in procurement, providing the infrastructure for testing the products and the relevant feedback, and through introducing "offset programmes" for acquisitions above a certain level, to mention a few.

The Croatian defence industry sector was recognised as relevant for further governmental support for its development. However, there may be a need for a novel approach to defence economic policy development if the balance of the security-economic nexus is to be achieved. The support may particularly be given through R&D, to ensure competitiveness, and the growth of synergy in the Triple Helix model.

National political priorities, expressed through a formal DIP can have a significant impact on the size, structure and capabilities, the driving behaviours of individual firms and ultimately sustainability of the national defence industry. There is, arguably, a very high potential in the implementation of the Smart Specialisation Strategy that should help them retain existing capacities and focus on new niches, such as dual-use products. This is the proof of the current active Government's support to this critical industry sector and its economy. The Smart Specialisation Strategy currently represents the most important policy document that intends to maintain and increase the existing positive trends of the development of the DIB in Croatia, such as the rise of exports, development and implementation of new technologies, innovativeness, etc.

To support the ambitious Smart Specialization Strategy, production should expand and new products and technologies should be developed. The support from the government is necessary to ensure business friendlier legislative and administrative solutions, and a more supportive environment. The defence industry is not subsidised, and in the market, they rely on their capacities and resources. In the defence industry, the arrangements realised through government-supported agencies are crucial, because being registered as domestic armed forces and police provider may be the decisive factor for trading (Pintarić, 2015).

A reliable defence industry gives legitimacy to both a national and collective security policy. Without technology, the military would not be able to develop modern capabilities. Despite all international agreements and guarantees, the Croatian defence industry cannot be entirely reliant on foreign suppliers and be passive consumers of others' efforts only. Arguably, Croatia has to be able to contribute to NATO and the EU militarily and with defence industry capability as well. A strong industry provides better security for supply, better freedom of choice and better freedom of decision.

The Croatian national industry currently has neither ambitions nor capacity to provide a full range of arms and equipment needed by the Croatian Armed Forces to be able to participate in the full spectrum of missions. Development of capabilities for the full spectrum of missions and tasks is hardly possible even for much larger and wealthier countries than the Republic of Croatia. But the Croatian defence industry can specialise. Namely, it can provide to the national defence with state-of-the-art basic systems, preferably dual-use, and guarantee their upgrades and maintenance. Thus, in the case of a potential crisis, the Armed Forces will have the capabilities to keep their systems operational. In other words, maintenance would be a lot simpler and ultimately under the state's jurisdiction if a crisis culminates. But, this has to be articulated through a sound national DIP or strategy.

This evaluation and analysis of Croatia's DIB has some limitations, stemming mainly from the fact that the classification of companies that belong to the defence sector (producers of weaponry and military equipment) does not include all suppliers for national defence. In Croatia, many of these are classified as producers of the equipment for special purposes. Consequently, this makes it difficult to find relevant statistics for analytic purposes and to create relevant arguments for making strategic decisions.

Bibliography:

- AIC - Agency for Investments and Competitiveness (2013). *Strateške smjernice za razvoj obrambene industrije RH 2013-2020 (Strategic guidance for the development of Croatia's defence industry 2013-2020)*. Zagreb: Agencija za investicije i konkurentnost.
- Beard, T.R. (1993). "Industrial Organization and the Defense Industry: A Research Agenda", in: Leitzel, J. (ed.) *Economics and National Security*. Boulder: Westview Press, pp. 29-43.
- Bečić, E., Švarc, J. (2015). "Smart Specialisation in Croatia: Between the Cluster and Technological Specialisation", *Journal of the Knowledge Economy*, (6), 2: 270-295
- Boulanin, V. (2012). *Defence and security industry: Which security industry are you speaking about?* Paris: Institut de recherche stratégique de l'École militaire.
- CDICC - The Croatian Defence Industry Competitiveness Cluster. (n.d.). *Defense technologies and dual-use products in Croatia*. Zagreb: Ministarstvo gospodarstva, poduzetništva i obrta, Hrvatski klaster konkurentnosti obrambene industrije. Available at: <http://eng.hkkoi.hr/index.php/dual-use/> [Accessed: 20th October 2017]
- Croatian Government (2013). *Strateški pregled obrane (Strategic Defence Review)*. Official Gazette of the Republic of Croatia No. 101/2013.

- Croatian Parliament (2002). *Zakon o proizvodnji, remontu i prometu naoružanja (Code on production, overhaul and trade of armament)*. Official Gazette of the Republic of Croatia No. 33/2002.
- Croatian Parliament (2014a). *Industrijska strategija RH 2014.-2020. (Croatian industrial strategy 2014.-2020)*. Official Gazette of the Republic of Croatia No. 126/2014.
- Croatian Parliament (2014b). *Dugoročni plan razvoja Oružanih snaga Republike Hrvatske za razdoblje 2015-2024 (The Croatian Armed Forces Long Term Development Plan 2015-2024)*. Official Gazette of the Republic of Croatia No. 151/2014.
- Croatian Parliament (2017). *Strategija nacionalne sigurnosti Republike Hrvatske (National Security Strategy of the Republic of Croatia)*. Official Gazette of the Republic of Croatia No. 73/2017.
- DSCA - Defense Security Cooperation Agency (2014). *The Defense Security Cooperation Agency Helps Its Foreign Partners*. Washington, D.C.: Defense Security Cooperation Agency.
- Dukić, S. (2017). "Obrambena industrija – motor razvoja hrvatskog gospodarstva" ("Croatian defence industry – an engine for the development of the Croatian economy"), *Hrvatski vojnik*, (528), 2017: 35-39. Available from: <https://hrvatski-vojn timer.hr/godina-2017-menu/item/3346-obrambena-industrija-%E2%80%93-motor-razvoja-hrvatskog-gospodarstva.html> [Accessed: 27th November 2017]
- Dunne, J.P. (1995). "The Defence Industrial Base", in: Hartley, K. & Sandler, T. (eds.) *Handbook of Defense Economics, Volume 1*. North Holland: Elsevier Science B. V. pp. 399-430.
- EC - European Commission (2012). *Security Industrial Policy: Action Plan for an innovative and competitive Security Industry*. COM(2012) 417. Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012SC0233&from=EN> [Accessed: 7th October 2017]
- Etzkowitz, H. (2002). *The Triple Helix of University - Industry - Government: Implications for Policy and Evaluation*. Stockholm: Science Policy Institute.
- Government of the RC - Government of the Republic of Croatia (2016). *Strategija pametne specijalizacije (Croatia's smart specialization strategy)*. Official Gazette of the Republic of Croatia No. 33/2016.
- Hartley, K. (2011). "Economics and defence policy: An overview", in: Hartley, K. (Ed.) *The Economics of Defence Policy: A new perspective*. New York, NY: Routledge, pp. 1-13.
- Kane, R. (2009). *National governments and their defence industrial bases: A comparative assessment of selected countries*. A study submitted to Canadian Association of Defence and Securities Industries (CADSI).
- Kapstein, E.B. (1992). *The Political Economy of National Security - A Global Perspective*. Columbia, SC: University of South Carolina Press.
- Lifshitz, Y. (2003). *The Economics of Producing Defence Illustrated By The Israeli Case*. New York: Springer Science+Business Media.

- MoD and MoEEC RC – Ministry of Defence and Ministry of Economy, Entrepreneurship and Crafts of the Republic of Croatia (2014). *Naputak o načinu i uvjetima primjene "offset programa" (The instruction on the manner and conditions of the application of the "offset program")*. Official Gazette of the Republic of Croatia No. 26/2014.
- MoEEC RC - Ministry of Economy, Entrepreneurship and Crafts of the Republic of Croatia (2014). *Strategy for innovation encouragement of the Republic of Croatia 2014-2020*. Official Gazette of the Republic of Croatia No. 153/2014.
- MoEEC RC - Ministry of Economy, Entrepreneurship and Crafts of the Republic of Croatia (2016). *Godišnje izvješće o izvozu robe vojne namjene i nevojnih ubojnih sredstava za komercijalne svrhe za 2015. godinu (Annual report on export and import of military goods and non-military lethal goods for 2015)*.
- MoRDEF RC - Ministry of Regional Development and EU Funds of the Republic of Croatia (2012). *EU structural and investment funds, Operational Programme Under the 'Investment for Growth and Jobs' Goal. Operational Programme Competitiveness and Cohesion 2014 - 2020*. Zagreb: Ministarstvo regionalnog razvoja i fondova Europske unije.
- Office of Technology Assessment (1992). *Building future security: Strategies for restructuring the defense technology and industrial base*, OTA-ISC-530. Washington, DC: Government Printing Office.
- O'Hanlon, M. (2011). *The National Security Industrial Base: A Crucial Asset of the United States, Whose Future May Be in Jeopardy*. Washington, DC: Brookings, 21st Century Defense Initiative Policy Paper.
- Pack, H., Saggi, K. (2006). "Is There a Case for Industrial Policy? A Critical Survey", *The World Bank Research Observer*, (21), 2: 267-297.
- Pavlić, V. (2016). "USS Mount Whitney Undergoing Overhaul in Rijeka". *Total Croatia News*. Available from: <http://www.total-croatia-news.com/business/3103-uss-mount-whitney-undergoing-overhaul-in-rijeka> [Accessed 28th December 2017]
- Pintarić, V. (2015). "Military equipment exports on steady upward trend", *CROMIL Croatian Military Magazine*, (7), 13: 12-15. Available from: https://hrvatski-vojn timer.hr/pdfmagazin/cromil_13.pdf [Accessed 28th December 2017]
- Poslovni Dnevnik. (2016). "Proizvođači vojne opreme sada mogu dobiti potpore EU" ("Manufacturers of military equipment can now get the EU support"). *Poslovni dnevnik*. Available from: <http://www.poslovni.hr/eu-fondovi/proizvoaci-vojne-opreme-sada-mogu-dobiti-potpore-eu-308029> [Accessed 28th December 2017]
- RAND (n.d.). *Economic Policy*. RAND Corporation. Available from: <http://www.rand.org/topics/economic-policy.html> [Accessed 28th June 2017]
- Simm, M. (2016). "The next industrial (r)evolution: What implications for the security and defence sector?", *European Defence Matters*, (10), 12-16.
- Sköns, E., Dunne, J.P. (2009). "Arms production, Economics of", in: Kurtz, L. (ed.) *Encyclopedia of Violence, Peace and Conflict*, vol. 1. Oxford: Elsevier, Academic Press. pp. 112-123.

SoSfD UK (2010). *Equipment, Support, and Technology for UK Defence and Security*. London: the Secretary of State for Defence, United Kingdom, The Stationery Office Limited.

SoSfD UK (2012). *National Security Through Technology: Technology, Equipment, and Support for UK Defence and Security*. London: the Secretary of State for Defence, United Kingdom, The Stationery Office Limited.

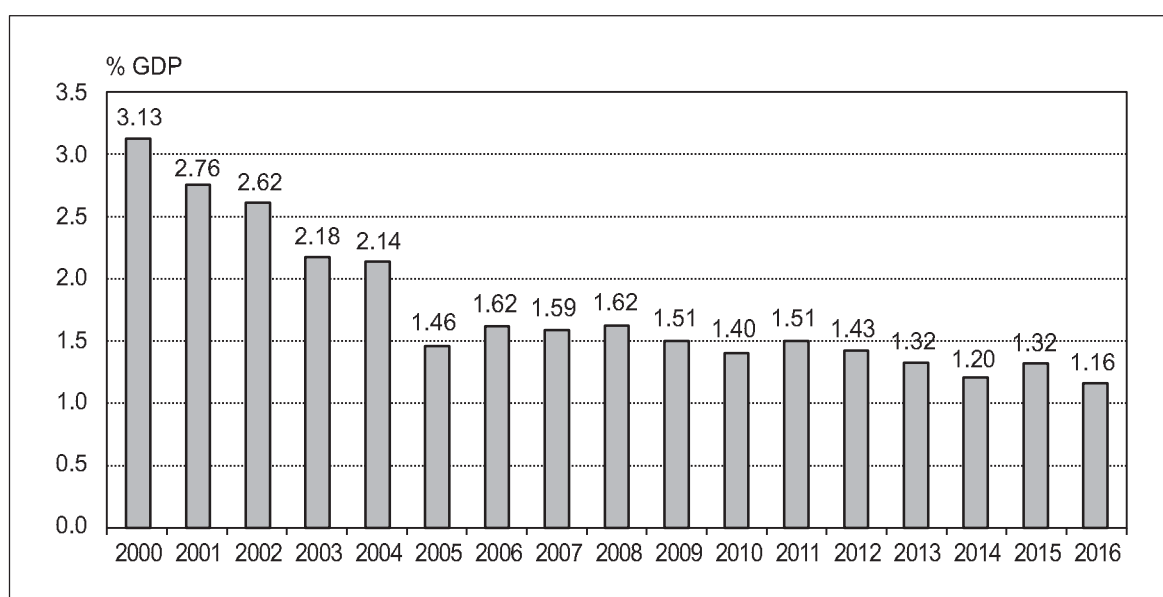
Tabak, I. (2017). "OH-58D Kiowa Warrior flights start in Croatia", IHS Jane's Defence Weekly. Available from: <http://www.janes.com/article/69633/oh-58d-kiowa-warrior-flights-start-in-croatia> [Accessed 27th October 2017]

Weidenbaum, M. (2015). "Reconciling Economic Policy and Defense Requirements", *The St. Croix Review*. Available from: <http://www.stcroixreview.com/index.php/past-issues/item/670-reconciling-economic-policy-and-defense-requirements> [Accessed 28th October 2017]

Appendix A:

Figure A1.

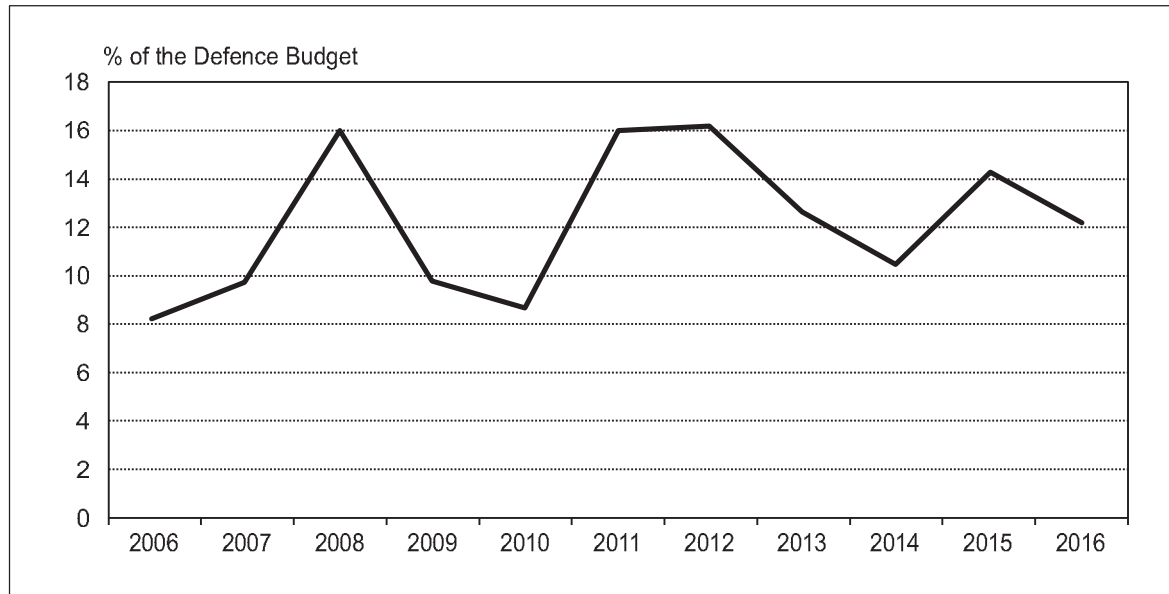
DEFENCE EXPENDITURE AS A SHARE OF GROSS DOMESTIC PRODUCT



Source: own, adapted from data from the Croatian MoD's Annual Report on Defence (years 2000-2016)

Figure A2.

PROCUREMENT AND CONSTRUCTION AS A SHARE OF DEFENCE EXPENDITURE



Source: own, adapted from data from the Croatian MoD's Annual Report on Defence (years 2000-2016)

HRVATSKA INDUSTRIJSKA BAZA OBRANE – PERPEKTIVA EKONOMSKE POLITIKE

Sažetak

U radu se procjenjuju kretanja u hrvatskoj industrijskoj bazi obrane (IBO) iz perspektive ekonomske politike. Analizom postojećih policy i strateških dokumenata procjenjuju se potencijali i prepreke hrvatskoj IBO da postane koristan za cjelokupno hrvatsko gospodarstvo i relevantni dobavljač za nacionalnu obranu. Rezultat pokazuje da se IBO u Republici Hrvatskoj ne razvija niti održava u okviru formalnog okvira policy i strateških dokumenata. Međutim, sustavni pristup utemeljen Strategijom pametne specijalizacije pruža široki okvir za inicijative i prakse koji imaju za cilj osigurati održivost i rast tvrtki koje čine hrvatsku IBO.

Ključne riječi: ekonomske politike, obrambena industrija, industrijska baza obrane, strategija pametne specijalizacije